

REMARKS/ARGUMENTS:

CLAIM REJECTIONS -35 USC § 103 - LI ET AL or HARPELL ET AL IN VIEW OF GB 2024755

The Examiner stated that Claims 1-9 and 17 are rejected under 35 USC 103(a) as being unpatentable over either one of Li et al. or Harpell et al. in view of GB 2024755.

The Examiner stated that each of Li et al. and Harpell et al. disclose substantially all claimed elements of the invention, including the formation of ballistic protection composite panels comprising a first layer formed from high molecular weight polyethylene fibers with a phenolic resin matrix, a middle layer of high molecular weight polyethylene fibers with an epoxy resin matrix, and a third layer of high molecular weight polyethylene fibers with a phenolic resin matrix (see especially column 6, line 6; column 9, lines 9-15; and column 17, lines 5-25 of Li et al and column 8, lines 33-38; column 9, lines 44-53; column 10, lines 17 and 54-60 of Harpell et al.

Response:

There are several physical and functional features of the Applicant's present invention that distinguish it from either the Li et al. or the Harpell et al. disclosures. These arguments demonstrate that Applicant's present invention provides functional advantages and mechanical advantages that are not claimed or disclosed in the Li et al. or the Harpell et al. patents.

In reference to Li et al., column 6 line 6, as suggested by the Examiner, Li et al. simply discloses a "high molecular weight polyethylene". In column 9, lines 9-15, as

suggested by the Examiner, Li et al. discloses a laundry list of matrix materials which includes epoxy resin and phenolic resin. In column 17, lines 5-25, as suggested by the Examiner, Li et al. discloses a composite structure with a rigid layer, most preferably a “ceramic plate or ceramic metal composite”. Also disclosed in this reference is a “A particularly useful ballistic resistant complex composite comprising highly-oriented high molecular weight polyethylene filament in an elastomeric matrix on which is formed at least one layer comprising highly-oriented ultra-high molecular polyethylene filament in a rigid matrix, such as epoxy resin.”

Not referenced by the Examiner is the definition of elastomeric matrix by Li et al. which is found in column 9, lines 24-4. Here, the elastomer matrix is disclosed “In the preferred embodiments of the invention, the matrix material is a low modulus elastomeric material. A wide variety of elastomeric materials and formulations may be utilized in the preferred embodiments of this invention. Representative examples of suitable elastomeric materials for use in the formation of the matrix are those which have their structures, properties, and formulations together with crosslinking procedures summarized in the Encyclopedia of Polymer Science, Volume 5 in the section Elastomers-Synthetic (John Wiley & Sons Inc., 1964). For example, any of the following elastomeric materials may be employed: polybutadiene, polyisoprene, natural rubber, ethylene-propylene copolymers, ethylene-propylene-diene terpolymers, polysulfide polymers, polyurethane elastomers, chlorosulfonated polyethylene, polychloroprene, plasticized polyvinylchloride using dioctyl phthalate or other plasticers well known in the art, butadiene acrylonitrile elastomers, poly(isobutylene-co-isoprene), polyacrylates, polyesters, polyethers, fluoroelastomers, silicone elastomers, thermoplastic elastomers, copolymers of ethylene.”

In reference to Harpell et al., column 8, lines 33-38, as suggested by the Examiner, Harpell et al. discloses a list of fibers including polyethylene, cross-linked

polyethylene and ethylene copolymers, and a list of matrix materials including phenolics and epoxy, as well as low modulus resins. Not referenced by the Examiner is a definition of the elastomeric matrix material disclosed in column 6, lines 4-23, “**A wide variety of elastomeric materials and formulations may be utilized in this invention. The essential requirement is that the matrix materials of this invention have appropriately low moduli as noted above. Representative examples of suitable elastomers of the elastomeric material have their structures, properties, and formulations together with crosslinking procedures summarized in the Encyclopedia of Polymer Science, Volume 5, "Elastomers-Synthetic" (John Wiley & Sons Inc., 1964).** For example, any of the following materials may be employed: polybutadiene, polyisoprene, natural rubber, ethylene-propylene copolymers, ethylene-propylene-diene terpolymers, polysulfide polymers, polyurethane elastomers, chlorosulfonated polyethylene, polychloroprene, plasticized polyvinylchloride using dioctyl phthalate or other plasticers well known in the art, butadiene acrylonitrile elastomers, poly(isobutylene-co-isoprene), polyacrylates, polyesters, polyethers, fluoroelastomers, silicone elastomers, thermoplastic elastomers, copolymers of ethylene. In column 9 lines 44-53, Harpell et al. discloses, “**... an arrangement of a plurality of layers or laminates in which the coated fibers are arranged in a sheet-like array ...**”. In column 10, line 17, as suggested by the Examiner, Harpell et al. recites “**structural member of aircraft**”. Not referenced by the Examiner, in column 10, lines 12-17, which discloses “**The simple elastomeric matrix composites are incorporated into complex composites to provide a rigid complex composite article suitable, for example, as structural ballistic-resistant components, such as helmets, structural members of aircraft, and vehicle panels.**” In column 10, lines 54-60, as suggested by the Examiner, Harpell et al. discloses, “**a particularly useful ballistic resistant complex composite comprises a simple composite comprising highly-oriented ultra-high molecular weight polyethylene fiber in an elastomeric matrix on which is formed at least one layer comprising highly-orientated ultra-high molecular weight**

polyethylene fiber in a rigid matrix, such as an epoxy resin.” This disclosure in Harpell et al. is essentially identical to the relevant disclosure in Li et al.

The Applicant asserts that his present invention neither discloses nor claims any elastomeric matrix. Each of the prior patents disclosed and claimed at least one layer with a matrix material having a low modulus. The Applicant’s present invention discloses and claims that all layers are rigid with a high modulus composite layer. Therefore, prior patents actually teach away from using a rigid matrix in all layers as the present invention.

Furthermore, the present invention disclosed and claimed a different weave thread count and composition of the fabric between layers which are not taught, disclosed or claimed by Li et al. or Harpell et al. In the present patent application, a dense weave of ultra-high molecular polyethylene is claimed in Claims 2 and 4 for outside layers and a loose weave of ultra-high molecular polyethylene in Claim 3 is claimed for the interior layer. Li et al. is completely silent as to the thread count characteristic as is Harpell et al. Harpell does alter the direction of the layers (Col. 9, lines 44-55), but does not disclose or claim different weave thread counts or compositions.

In addition, the GB 2024755 patent application discloses in the specification and drawings that an independent and further cubicle in an aircraft for a guard to control access the aircraft flight deck (see Column 1, lines 16-24). The Applicant’s present invention does not disclose or claims an independent or further cubicle in an aircraft, but rather replaces the original non-ballistic protection flight deck door with the present invention which provides ballistic protection composite panels.

Failure to demonstrate all elements of prima facie case of obviousness

The Applicant also argues respectfully that the Examiner has not met the burden of establishing a prima facie case of obviousness in accordance with current patent law.

First, one of the primary elements of establishing a prima facie case of obviousness is that they teach the claimed subject matter obvious. One of the primary elements of establishing a prima facie case of obviousness is that the references generally place the needed subject matter supporting the obviousness rejection in the public domain before the date of invention (In re Zenitz, 333 F.2d 924, 142 USPQ 158, (C.C.P.A. 1964). In this regard, the Federal Circuit has stated that “the test for obviousness is not whether the features of one reference may be bodily incorporated into another reference . . . Rather; we look to see whether combined *teachings* render the claimed subject matter obvious” (In re Wood, 599 F.2d 1032, 202 USPQ 171, 174 (C.C.P.A. 1979) (emphasis added)(citing In re Bozek, 416 F.2d 1385, 1390, 163 USPQ 545, 549-550 (C.C.P.A. 1969); In re Mapelsden, 329 F.2d 321, 322, 141 USPQ 30, 32 (C.C.P.A. 1964).

The Applicant asserts that the prior art references fail to teach an invention with all layers comprising a rigid or high modulus structure. Furthermore, the Applicant asserts that the prior art references fail to teach the different thread count and compositions between layers. In addition, regarding the GB 2024755 patent application, the Applicant’s present invention does not disclose or claims an independent or further cubicle in an aircraft, but rather replaces the original non-ballistic protection flight deck door with the present invention which provides ballistic protection composite panels.

Another primary elements of establishing a prima facie case of obviousness is that the references require some reason, suggestion, or motivation from the prior art as a whole for the person of ordinary skill to have combined or modified the references. With respect to this required element, the Federal Circuit has stated that “obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching suggestion or incentive supporting the combination.” (See *In re Geiger*, 815 F.2d 686, 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). See also *Diversitech Corp. v. Centure Steps, Inc.*, 850 F.2d 675, 678-79, 7 USPQ 2d 1315, 1318 (Fed. Cir. 1988); *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 311 (Fed. Cir. 1983):

A factor cutting against a finding of motivation to combine or modify the prior art is when the prior art teaches away from the claimed combination. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that the applicant took. (*In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994).

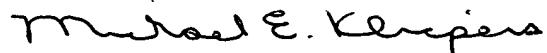
The Patent Office applies this same standard as explained by the Board, when the incentive to combine the teachings of the references is not readily apparent, it is the duty of the examiner to explain why combination of the reference teachings is proper. Absent such reasons or incentives, the teachings of the references are not combinable. (*Ex parte Skinner*, 2 USPQ 2d 1788, 1790 (B.P.A.I. 1987).

Applicant asserts that there is no teaching suggestion or incentive supporting the combination in either Li et al. or Harpell et al. Furthermore, the Applicant asserts that the prior art references teach away from using all rigid or high modulus layers by incorporating an elastomeric matrix layer in the respective patents.

For the foregoing reasons argued above, Applicant respectfully opines that the Examiner has not met the burden of establishing a prima facie obviousness based on Li et al. or Harpell et al. in view of the GB 2024755. Accordingly, Applicant respectfully submits that Claim 1-9 and 17 patentably distinct and are fully distinguishable over Li et al. or Harpell et al. in view of GB 2024755. The Applicant respectfully requests that the 103 rejection be removed.

Based on the foregoing, Applicant respectfully submits that the application now is in condition for prosecution and allowance. If any matters can be resolved by telephone, the Examiner is invited to call the undersigned attorney at the telephone number listed below.

Respectfully submitted,



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